



Mechanical Control

Harvesting:

- Expensive
- Small-scale (to provide access)
- Disposal problems
- Contributes to spread
- Growth exceeds rate of harvesting

Barriers:

- Containment
- Has broken 2" diameter steel cable

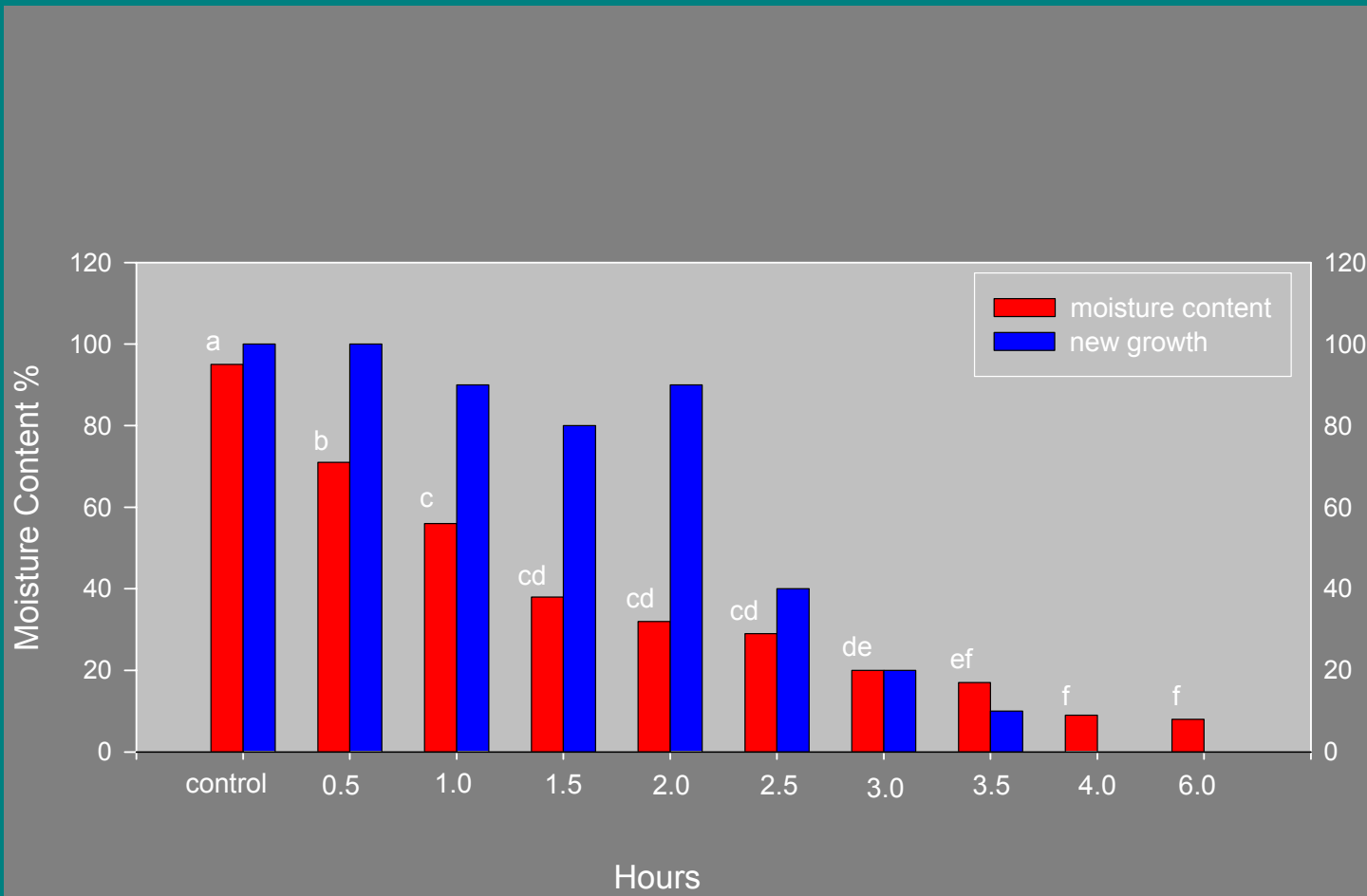




Cultural Control (Drawdown)

Desiccation will
kill Giant
Salvinia

but,
it is very difficult
to get it dry
enough to effect
complete kill





An Ecological Approach to Management of Invasive Aquatic Plants

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Funded by: Aquatic Plant Control Research Program





A typical case history

Year 1: “Maybe it won’t be a problem
in
(insert lake or state name here)”

Year 4: “Now what are we going to
do?”



Insert
many
meetings
here





A typical case history

- **By the time we realize that we have to take action, the situation is usually very serious and we are running out of options**
- **By letting the situation get out of hand we often eliminate all but the most drastic of actions**
 - “drain the lake”
 - whole lake herbicide applications
 - massive grass carp stocking



A typical case history

- **Drastic management actions are major disturbances and they serve to set the system back to the empty niche condition**
- **Empty niches invite colonization by weedy species**
- **Repetitive action of this type results in “survival of the fittest”. Our management actions are often exerting strong selection pressure for the worst weed!**



There is no 'silver bullet'

- **Integrated pest plant management**
 - Use all appropriate technologies
- **Develop a lake-specific management plan**
 - goal is not elimination of all vegetation
 - goal is not eradication of nonindigenous vegetation
 - goal is the development of a diverse plant community dominated by native species

In this way we derive the benefits that aquatic plants can provide and we seek sustainable solutions to the problem of nonindigenous species



Ecosystem Approach: *new infestations*

- **Need to have plan in place *before* invasions!**
 - Monitor the water body to insure prompt awareness of the arrival of any invasive species
 - Implement the plan
 - Control the infestation before it spreads
 - Introduce native aquatic plant species to occupy the niche
 - Introduce host-specific biocontrols if appropriate and as soon as they become available
 - Continue diligent monitoring



Ecosystem Approach: *established infestations*

- **Develop the plan as quickly as possible**
 - Monitor the water body to document areal distribution of all (native and nonindigenous) aquatic vegetation
 - Implement the plan
 - Limit spread of the invasive species
 - Introduce native aquatic plant species to occupy the niche
 - Introduce host-specific biocontrols
 - Continue diligent monitoring



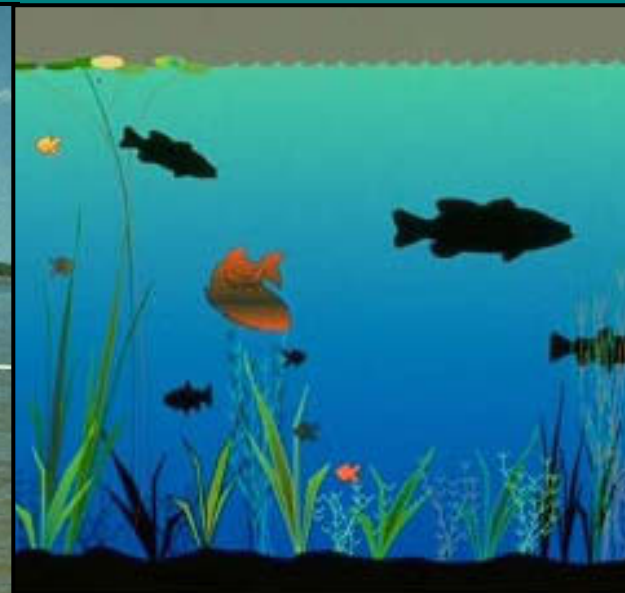
Ecosystem Approach: *systems at risk of invasion*

- Pre-emptive establishment of native species to occupy the niche
- Develop a plan **before** invasion!
 - Monitor the water body to document areal distribution of native aquatic vegetation and to insure prompt awareness of the arrival of any invasive species





The best defense (against nonindigenous invasive aquatic plants) is a good offense!





Recommendations

- **Assess fish populations to determine if they are still a consideration**
 - If the fish populations have been lost, might consider a large-scale herbicide treatment
 - If fish populations are still intact, might consider a phased herbicide treatment plan (perhaps 25% every 10 days?)
- **After you get past the “crisis management” phase, institute long-term, holistic, sustainable, ecosystem management plan**



Ecosystem Management

- **Survey literature and the islands for appropriate aquatic plant species to “fill the niche”**
- **Develop large-scale methods for propagation and establishment of beneficial plant species**
- **Evaluate nutrient sources and sinks**
- **Evaluate use of constructed wetlands and other appropriate technologies for nutrient abatement**
- **Implement an island-wide monitoring plan**



How do you pay for it?

- Congressional and Corps HQ support for reinstating the APC cost-share (50:50) program
- Section 206 ecosystem restoration cost-share program (65:35 including "in-kind")
- NFWF
- NISA?



To be continued?

